

Remarks

This paper is responsive to an Official Action that issued in this case October 24, 2003. In the Action, the Office:

- i. rejected claims 8, 11-13, 16 and 20 under 35 USC §102 as being anticipated by U.S. Pat. No. 6,127,189 to Joulli *et al.*;
- ii. rejected claims 8-22 under 35 USC §103 as being obvious over U.S. Pat. No. 6,482,264 to Sun in view of Joulli *et al.*; and
- iii. withdraw claims 1-7 from further consideration as being drawn to a non-elected invention.

Reconsideration of this case is respectfully requested in view of the foregoing amendments and the following remarks. Claims 8, 10, and 16 have been amended and new claims 23-26 have been added.

With regard to issue (iii) above, as requested, Applicant affirms the election of claims 8-22 for further prosecution. It is noted that claims 1-7 were cancelled in Applicant's previous paper.

Claims 8, 11-13, 16
and 20 are Allowable
over Jouille *et al.*

The Office rejected claims 8, 11-13, 16 and 20 as being anticipated by Joullie *et al.* This reference pertains to the problem of finding fingerprints (*e.g.*, at a crime scene, *etc.*) and discloses a method and composition for detecting fingerprints.

According to Jouille *et al.*, a fingerprint can be detected by contacting an amine compound (that is found in a fingerprint) with a 1,2 indanedione derivative and then assessing an optical property of the mixture. According to patent, the optical property is assessed by exposing the mixture to EM having a wavelength less than about 530 nm and then observing whether or not fluorescence occurs. If the mixture fluoresces, then a fingerprint is detected.

The applicant's claimed apparatus and method, on the other hand, is typically intended for use in assay screening wherein a large number of cellular events (*e.g.*, calcium flux, physiological events, chemical reactions, *etc.*) are occurring. Due to the large number of events taking place, it would be too time consuming to individually examine each event. Rather, a "snap-shot" of the full array on a specimen plate is advantageously taken via visible spectrum or infrared spectrum imaging systems.

Due to the differences in application, there are some significant differences between the method disclosed by Jouille *et al.* and the method and apparatus disclosed by applicant.

For example, Jouille *et al.* discloses that the method used to contact the amine in a suspected fingerprint with a 1,2 indanedione derivative is ***not critical***. One method mentioned by Jouille *et al.* is to direct a stream of atomized droplets comprising the 1,2 indanedione derivative at a surface. On the other hand, in applicant's invention, the manner in which reagent is delivered to the assay surface ***is critical***.

In particular, applicant discloses that for the assays to which its invention is directed, it is "important if not necessary" for the reagents that participate in the reactions to be delivered substantially simultaneously to locations on the specimen plate to ensure that the reactions that occur at various locations on the plate occur at the same time. This is particularly important for time-dependent assays, and for thermal imaging process that are ratiometric and comparative (p. 3, ¶¶ 11-12). The applicant's claimed apparatus and method dispenses liquid *uniformly* and *simultaneously* into a plurality of small cavities, such as in a micro-well plate (p. 3, ¶ 0014). For these reasons, in some embodiments, applicant's claimed apparatus comprises:

- An ultrasonic atomizer, as opposed to other types of atomizers (see p. 6, ¶¶ 39-40, p. 7, ¶¶ 42-45, claim 17). The ultrasonic atomizer provides a low coefficient of variation for reagent delivery across the specimen plate (p. 7, ¶ 45).
- An environmental enclosure around the atomizer to avoid disruption of atomized liquid by air currents (p. 6, ¶ 41, claim 10).
- A mask between the atomizer and specimen plate to address the issue of surface contamination and overspray (p. 7, ¶ 47, claims 14 and 18).
- Electrostatically focusing the atomized reagent to the desired delivery sites (p. 8, ¶¶ 48-49, claims 15 and 19).

A second critical aspect of applicant's invention is an imaging system that resolves activity (*e.g.*, the reactions taking place, *etc.*) *as a function of position*

on the sample plate. In Jouille *et al.*, a fingerprint is detected when a response (e.g., fluorescence, etc.) is observed; it is a digital phenomena: response or no response. On the other hand, in applicant's invention, identifying that a response occurs is useless if it cannot be determined exactly where on the sample plate it is coming from. Also, since applicant is concerned with a plurality of reactions, the magnitude of the output signal (relative or absolute) is important. For these reasons, in some embodiments, applicant's invention comprises an imaging system that is capable of resolving observed responses as a function of position on a sample plate. Applicant discloses at least two such systems, one for visible spectrum imaging (U.S. Pat. Appl. 09/872,207) (p. 8, ¶¶ 51-57) and one for infrared spectrum imaging (U.S. Pat. 6,570,158 B2) (p. 9, ¶¶ 58-67).

Amended claim 8 recites, in pertinent part:

a detector for detecting electromagnetic radiation, wherein said electromagnetic radiation is emitted when target events occur, wherein said target events are triggered by said reagent, and **wherein said detector is capable of determining a plurality of locations on said specimen plate from which said electromagnetic radiation is emitted corresponding to a plurality of target events occurring at said locations.**

Jouille *et al.* does not disclose (or even suggest) a detector that is capable of determining a plurality of locations on the specimen plate from which EM is emitted. Consequently, claim 8 and claims 9-15 dependent thereon are allowable over Jouille *et al.*

Amended claim 16 recites, in pertinent part:

determining locations of origin on said specimen plate of said detected electromagnetic radiation, which locations correspond to locations of said target events.

Jouille *et al.* does not disclose (or even suggest) a method including the operation of determining a plurality of locations on the specimen plate from which EM is emitted. Consequently, claim 16 and claims 17-22 dependent thereon are allowable over Jouille *et al.*

Claims 8-22 are
Allowable over
the Art of Record

The Office rejected claims 8-22 as being obvious over USP 6,482,264 to Sun in view of Jouille *et al.* Sun discloses a system and method for the fabrication of coating libraries. According to the disclosure, Sun's method supposedly accelerates the rate by which coatings can be generated and studied for various manufacturing applications.

Sun's system includes a mechanism for delivering a mixture of materials onto a substrate to form a coating. The system includes a mask, which is used to prevent the coating material from being deposited on certain regions of the substrate. The system also includes a testing device that tests the coatings. The testing device can be a UV absorbance tester or other device.

This reference was presumably cited to reject some of the dependent claims, such as the claim pertaining to placing the detector and/or atomizer within a housing, *etc.*

Frankly, it's not clear what the connection between Jouille *et al.* and Sun is. The Office alleges that it would be obvious to modify Sun to include EM of Jouille *et al.* to further test the surface of the deposit for surface imperfections. But Jouille *et al.* isn't need for this. Sun discloses, at col. 7, lines 25-30 that a suitable example of a testing device is "an ultraviolet ("UV") absorbance tester."

The combination is being made, apparently, to "bootstrap" some claim rejections using Sun. Apparently, the Office believes that Jouille *et al.* is closer to applicant's invention than Sun, and by coupling to the two cases, Jouille *et al.* will bolster any rejections based on Sun.

With regard to the comments regarding "the housing" (for the atomizer and/or detector), it seems clear from Sun's disclosure that the testing device (38) is physically remote from the various mechanisms required to produce the coating. Indeed, while the testing device is depicted in the functional flow diagram of the system, it is not shown in any figure that depicts the actual physical relationship of the various mechanisms to one another. As a consequence, there is no basis whatsoever for the Examiner to assert that "it would be obvious to put an atomizer and the detector under a common housing." Most likely, this is physically impossible, unless the housing is the size of a room. Clearly, this is not what's intended by the applicant, as the purpose of the housing is to prevent air currents from disrupting the atomizer. Furthermore, it is noted that there is no mention in Sun of placing the delivery mechanism in a

housing to reduce the incidence of "atomized reagent from going into the surrounding air" or for any other reason.

Whether on its own, or combined with Jouille *et al.*, there is no teaching or suggestion of the limitations of claims 1 and 8 relating to an apparatus or method wherein the detector is capable of determining a plurality of locations on said specimen plate from which said electromagnetic radiation is emitted corresponding to a plurality of target events occurring at said locations. Consequently, independent claim 8, and claims 9-15 dependent thereon, and independent claim 16, and claims 17-22 dependent thereon, are allowable over the art of record.

New Claims 23-26
Are Allowable Over
the Art of Record

New claim 23 recites an imaging system comprising:

an atomizer that delivers a reagent to a specimen plate as a spray of atomized liquid;
a housing, wherein said atomizer is disposed in said housing; and
a detector for detecting electromagnetic radiation, wherein said electromagnetic radiation is emitted when target events occur, wherein said target events are triggered by said reagent.

Neither Jouille *et al.*, Sun, nor the combination thereof suggest the apparatus that is recited in claim 23. In particular, there is no disclosure or suggestion in the references to place the atomizer in a housing.

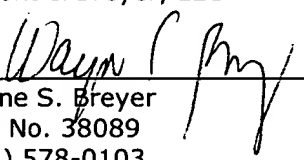
Conclusion

It is submitted that claims 8-26 now presented for examination are allowable over the art of record. A notice to that effect is solicited.

Respectfully,

DeMont & Breyer, LLC

By


Wayne S. Breyer
Reg. No. 38089
(732) 578-0103

DeMont & Breyer, LLC
100 Commons Way, Ste. 250
Holmdel, NJ 07733